WHAT IS CLAIMED IS:

1. A capacitor, comprising:

a pair of electrodes; and

a ferroelectric film sandwiched between the electrodes,

wherein the electrodes are provided perpendicular to a direction of a polarization axis of the ferroelectric film.

2. The capacitor as claimed in claim 1, wherein the electrodes are plates and substantially parallel to each other.

3. The capacitor as claimed in claim 1, wherein the ferroelectric film is an epitaxial film.

4. The capacitor as claimed in claim 1, wherein the ferroelectric film comprises a perovskite structure, a bismuth layer structure, or a tungsten bronze structure.

5. The capacitor as claimed in claim 1, wherein the ferroelectric film comprises PZT or a material formed by adding La, Ca, Sr, or Nb to PZT.

6. The capacitor as claimed in claim 1, wherein the electrodes comprise one of Pt, Ir, Ti, Ru, and oxides thereof.

7. A semiconductor device, comprising:

a semiconductor substrate; and

a capacitor provided on the semiconductor substrate, the capacitor including a pair of electrodes and a ferroelectric film sandwiched therebetween,

wherein the electrodes are provided perpendicular to a direction of a polarization axis of the ferroelectric film.

8. The semiconductor device as claimed in claim 7, wherein the direction of the polarization axis of the ferroelectric film is substantially parallel to a main surface of the semiconductor substrate.

9. The semiconductor device as claimed in

claim 7, wherein the ferroelectric film is an epitaxial film.

10. The semiconductor device as claimed in claim 7, wherein the ferroelectric film comprises a perovskite structure, a bismuth layer structure, or a tungsten bronze structure.

11. A semiconductor device, comprising:

a semiconductor substrate;

a transistor formed on the semiconductor substrate, the transistor including a gate electrode and a diffusion region;

a first interlayer insulating film covering the semiconductor substrate and the transistor;

a second interlayer insulating film formed on the first interlayer insulating film; and

a capacitor formed in the second interlayer insulating film, the capacitor including a pair of electrodes and a ferroelectric film sandwiched therebetween,

wherein the electrodes are provided perpendicular to a direction of a polarization axis of the ferroelectric film.

12. The semiconductor device as claimed in claim 11, wherein the direction of the

polarization axis of the ferroelectric film is substantially parallel to a main surface of the semiconductor substrate.

13. The semiconductor device as claimed in claim 11, wherein the ferroelectric film is an epitaxial film.

14. The semiconductor device as claimed in claim 11, wherein the ferroelectric film comprises a perovskite structure, a bismuth layer structure, and a tungsten bronze structure.

15. A method of manufacturing a semiconductor device including a capacitor including a pair of electrodes and a ferroelectric film with ferroelectricity sandwiched therebetween, the method comprising the steps of:

(a) depositing the ferroelectric film on a first substrate;

(b) forming the capacitor by grinding the ferroelectric film and forming the electrodes so that the electrodes are perpendicular to a direction of a polarization axis of the ferroelectric film;

(c) forming a first interlayer insulating film covering a surface of the first substrate and the capacitor;

(d) forming a transistor on a second

substrate, the transistor including a gate electrode and a diffusion region;

(e) forming a second interlayer insulating film covering a surface of the second substrate and the transistor;

(f) flattening surfaces of the first and second interlayer insulating films by chemical mechanical polishing;

(g) integrating the first and second substrates by joining the flattened surfaces of the first and second interlayer insulating films; and

(h) removing the first substrate.

16. The method as claimed in claim 15, wherein the first substrate employs one of a (100) surface and a (010) surface thereof as a main surface.

17. The method as claimed in claim 16, wherein the first substrate has an inclination with an offset angle from the one of the (100) surface and the (010) surface thereof.

18. The method as claimed in claim 16, wherein the first substrate comprises MgO, $SrTiO_3$, α-Al_2O_3, or $MgAl_2O_4$.

19. The method as claimed in claim 15, wherein:

a buffer layer is formed on the first substrate;

the first substrate comprises a Si substrate; and

the buffer layer comprises a MgO layer, an yttrium-stabilized ZrO_2 layer, a $SrTiO_3$ layer, a $MgAl_2O_4$ layer, or a CaO layer.

20. The method as claimed in claim 19, wherein:

an additional buffer layer is formed on the buffer layer;

the buffer layer comprises the MgO layer; and

the additional buffer layer comprises a $SrRuO_3$ layer, a $YBa_2Cu_3O_{7-\delta}$ layer, or a $La_{2-x}Sr_xCuO_4$ layer.

21. The method as claimed in claim 15, wherein:

a buffer layer is formed on the first substrate;

the first substrate comprises a Si substrate; and

the buffer layer comprises a $SrRuO_3$ layer, a $YBa_2Cu_3O_{7-\delta}$ layer, or a $La_{2-x}Sr_xCuO_4$ layer.